Progress Report
June 2003

FHWA POOLED-FUND PROJECT NUMBER: ***TPF5-(003)***

TITLE: Extending the Season for Concrete Construction and Repair

PRINCIPAL INVESTIGATOR:
Charles Korhonen
US Army Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, NH 03755
603/646-4438 phone
603/646-4640 fax
E-mail: Charles.J.Korhonen@erdc.usace.army.mil

OBJECTIVE: To develop an antifreeze admixture conforming to existing industry standards. This work will adapt recently developed knowledge about off-the-shelf admixtures to the specific conditions of highway construction. The admixture will protect concrete to 23°F (–5°C) or lower and allow concrete to gain appreciable strength while at that temperature.

REPORTING PERIOD: 01 April 2003 through 01 July 2003

ITEMS IN THIS ISSUE:

- Funding
- ASTM
- Looking ahead
- Phase II
- What we need from you

***Funding*:** The funding for this year has begun to arrive. As seemed to be the case for the previous two years, the remainder of the funds should arrive at FHWA some time this summer. Thanks for your support.

ASTM: I submitted a draft standard specification for antifreeze admixtures (aka, cold weather admixtures) to ASTM C09.23, *Chemical Admixtures*, in May 2003. This stand-alone specification was tailored after specification C 494. The draft essentially passed on its first ballot with only five negative votes, which means that there is sufficient interest to proceed. As a result, the Chairman of C09.23 established a separate subcommittee section to handle cold weather admixtures with me as the chairman. The first job will be to re-draft the specification, answering all negatives, and resubmit it for ballot this summer in time for the next ASTM meeting in December 2003. This new generation of admixtures should be commercialized in the coming years. In my view, our pooled-fund study has played a decisive role in all this. It has shown that antifreeze admixtures can be formulated from off-the-shelf products, and, more importantly, it has shown that there is considerable interest among northern state DoTs in using this new technology. Thank you for being a part of this process.

Technology Transfer: According to our proposal of 13 June 2000, the final step in this project is to prepare a technical report on the R&D work. The proposal also calls for a workshop to be held to guide you through our findings and recommendations. However, the feedback we have received indicates little interest in getting together at some location, primarily because of the budget difficulties many of you face.

It appears next to impossible to secure funds to travel to a workshop. Unless we hear otherwise, we are planning to develop a user's guide as a substitute for the workshop. The guide was listed as an unfunded option in the June proposal. The guide, like the workshop, will be developed to assist engineers, concrete producers, and contractors in working with antifreeze concrete. It will discuss the admixtures found to perform well in this study, and show how and when to incorporate them into fresh concrete. It will recommend trial batches, acceptable haul distances, temperature control, dosing sequence, plus placing, consolidating, and finishing procedures. The guide will also suggest methods for curing and estimating strength gain rates of the concrete based on prevailing ambient conditions. We are convinced that this technology is ready for technology transfer.

Looking ahead: Now that the antifreeze technology has been successfully demonstrated, the final project goals are to:

1. Complete the lab-testing program
2. Write a final technical report complete with a users' guide.

The report should be available for your review and comment later this summer.

***Phase II*:** Great news! A new pooled-fund number has been established for Phase II—TPF –5(075). As with Phase I, all project information, including the proposal, are located on our web site < http://www.crrel.usace.army.mil/concrete/concrete_durability.htm >. States wishing to participate in this study are authorized to use 100 percent SP&R funding (according to FHWA) for their contributions. The CRREL web site listed above is linked to the FHWA web site where funds may be obligated. Alternatively, you may access the FHWA site directly through this url: [www.pooledfund.org]. On the "search" screen, enter "extending" in the title section and it will bring up the Phase II project.

***What we need from you**:*

1. Let us know if you are interested on contributing to Phase II, as we hope to start work in October 2003 at the conclusion of Phase I.
2. Let us know if you want a workshop instead of the guide. We'd be happy to host it at CRREL this fall.